

SA

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/615,908	HISANO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ingrid Wright	2835	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/22/06.
2. ☒ The allowed claim(s) is/are 1 and 3-7.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

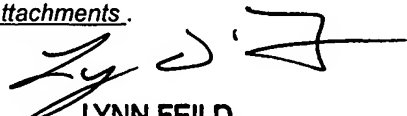
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input checked="" type="checkbox"/> Other <u>2 Attachments</u> .                    |

  
 LYNN FEILD

SUPERVISORY PATENT EXAMINER

**DETAILED ACTION**

***Allowable Subject Matter***

1. Claims 1 & 3-7 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the allowability resides in the overall structure of the device as recited in the independent claims 1 & 5, and at least in part, because claim 1 recites: “the heat intake portion being upstream of the cooling portion and thermally connected with the first flow channel so as to conduct heat from the cooling medium before the cooling medium arrives at the cooling portion, the heat outlet portion being downstream of the cooling portion and thermally connected with the second flow channel so as to conduct heat to the cooling medium,” & claim 5 recites: “a flow path link with the cooling portion, and configured to conduct the cooling medium from the first flow channel through the cooling portion to the second flow channel, the first flow channel being upstream of the cooling portion and thermally connected with the heat intake portion so as to conduct heat from the cooling medium to the heat intake portion before the cooling medium arrives at the cooling portion, the second flow channel being downstream of the cooling portion and thermally connected with the heat outlet portion to the cooling medium and an auxiliary heat radiation unit connected to the active heat transport element.” These aforementioned limitations in combination with all remaining limitations of claims 1 & 5 are believed to render the claims and all dependent therefrom patentable over the art of record.

Note: See attached fig. 2 of Ishida et al. & fig. 2 of Chu et al. for elements representing claimed limitations in the instant application.

**US 6173576 to Ishida et al.** is considered to be a close reference to the instant application, Ishida et al. disclosed an electronic element (12) and a second flow channel (20), in a flow of cooling medium (30), an active heat transport element (18), a heat intake portion and a heat outlet portion (see, notation on attached fig. 2 of Ishida et al.). Heat is conducted from the heat intake portion to the heat outlet portion and the heat outlet portion is thermally connected with the second flow channel (20), but Ishida et al. lacks the heat intake portion being upstream of the cooling portion and thermally connected with a first flow channel so as to as to conduct heat from the cooling medium before the cooling medium arrives at the cooling portion.

**US 20030188538 A1 to Chu et al.** is also considered a close reference to the instant application, Chu et al. disclosed an electronic element (50) and two flow channels (see, notation on attached fig. 2 of Chu et al.) in the flow of a cooling medium (see, notation on attached fig. 2 of Chu et al.), an active heat transport element (210) and a heat intake portion (see, notation on attached fig. 2 of Chu et al.). The active heat transport element (210) conducts heat transferred from the cooling liquid to a heat transfer plate (220), and heat is further pumped from the heat transfer plate (220) to an air-cooled heat sink (230) through the active heat transport element (210) (see, col. 3, par. 0040 of Chu et al.), but Chu et al. lacks heat conducted from the cooling medium before the cooling medium arrives at the cooling portion.

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The Examiner has cited the following pertinent references to the present invention:

US 6196003 B1, US 6822861 B2, 5504924, US 6542361 B2, US 6424533 B1, US 6298669 B1, US 5584183, US 6837057 B2, 6837057 B2, US 6525934 B1, US 6800933 B1, US 6778390 B2 5061630, US 200400866780 A1, US 5282364, US 20030058616 A1, US 6705089 B2, US 6330155 B1, US 6276448 B1, US 5473506 & US 6253556 B1 disclosed cooling configurations for electronic devices with or without peltier devices or active heat transport elements.

None of the cited references either alone or in combination is believed to render the present invention unpatentable as claimed.

Thus, claims 1 & 3-7 are allowed.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

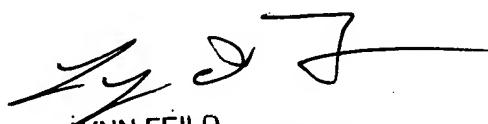
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ingrid Wright whose telephone number is (571)272-8392. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571)272-2800, ext 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IDW

  
LYNN FEILD  
SUPERVISORY PATENT EXAMINER

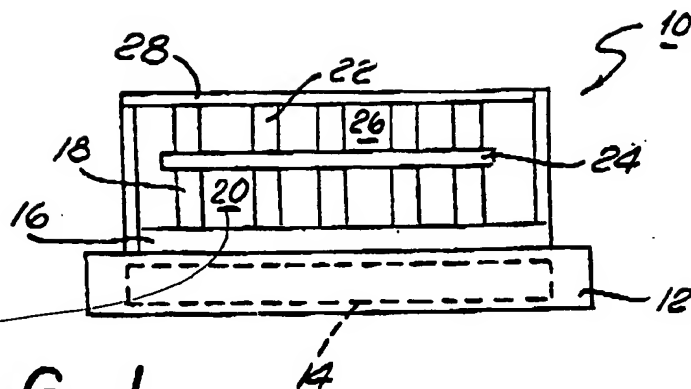


FIG. 1

Second flow  
channel

active  
heat transport  
element

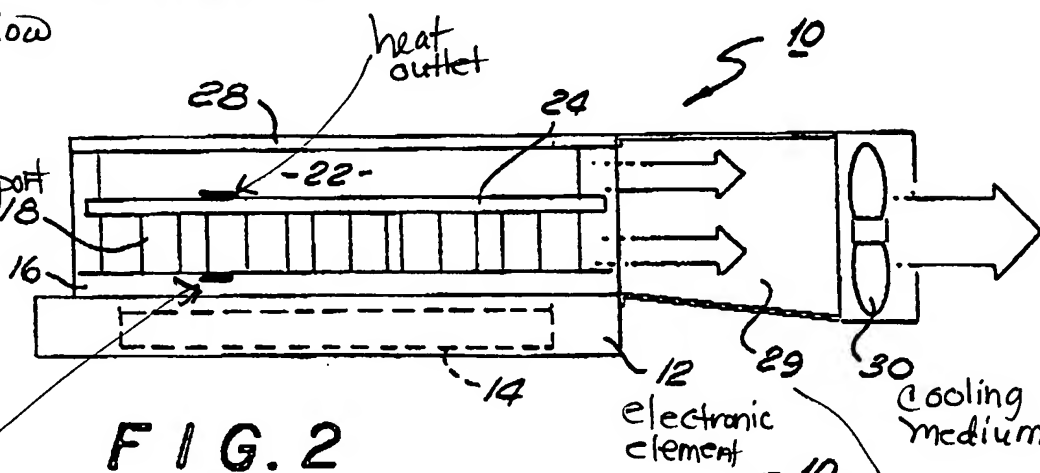


FIG. 2

heat  
intake

electronic  
element

cooling  
medium

cooling  
portion

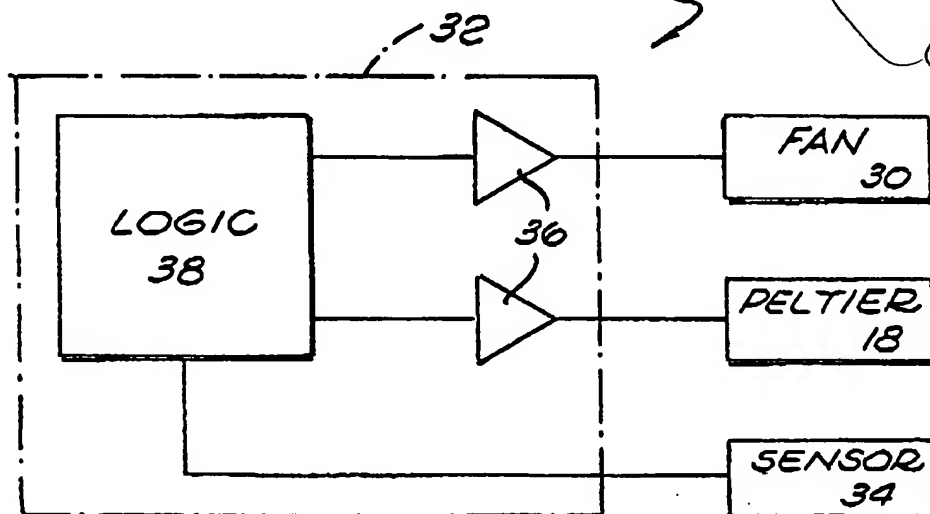


FIG. 3

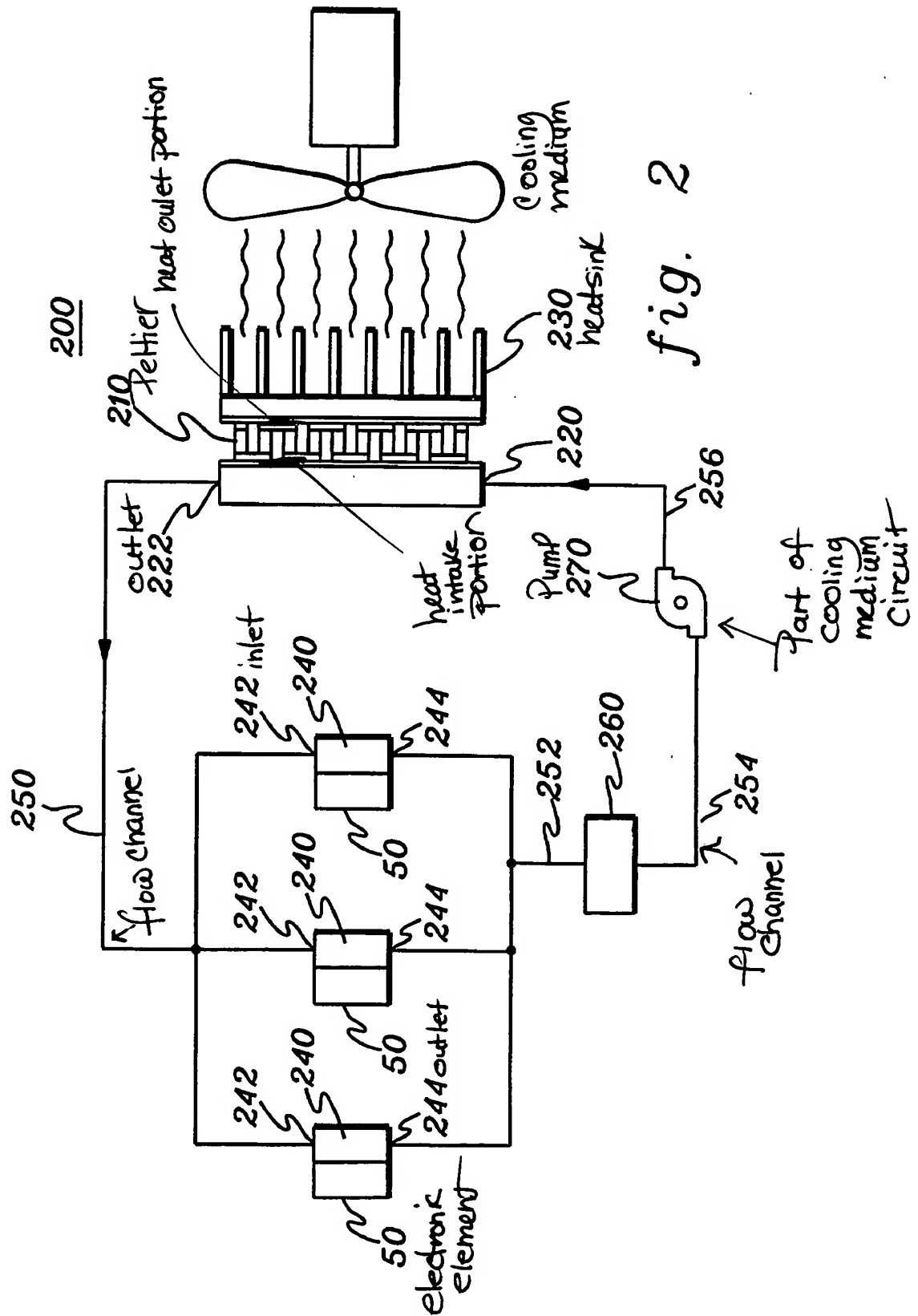


fig. 2